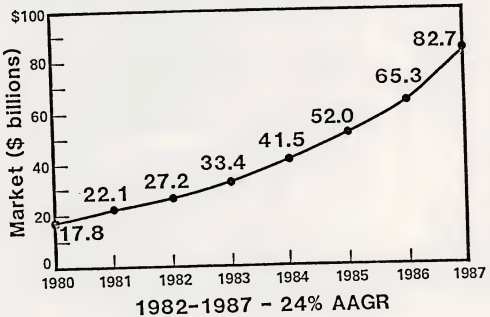
THE SOFTWARE INDUSTRY PROFILE: A BRIEF REVIEW AND LOOK AHEAD

PRESENTED TO:
IBM SOFTWARE ENGINEERING INSTITUTE

DECEMBER 1, 1982

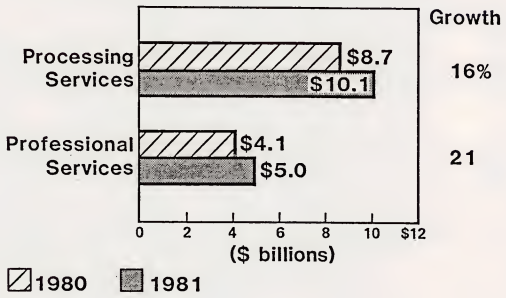
EDWARD I. METZ
SENIOR VICE PRESIDENT

U.S. INFORMATION SERVICES MARKET



1982-1987 - 24% AAGR

REVENUE GROWTH BY DELIVERY MODE (1980-1981)



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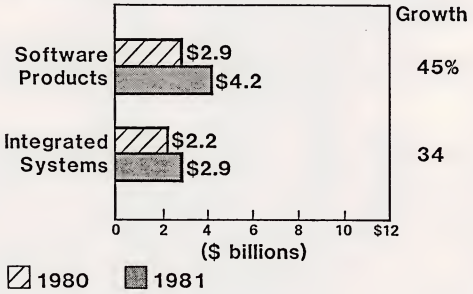
REVENUE GROWTH BY DELIVERY MODE (1980-1981)



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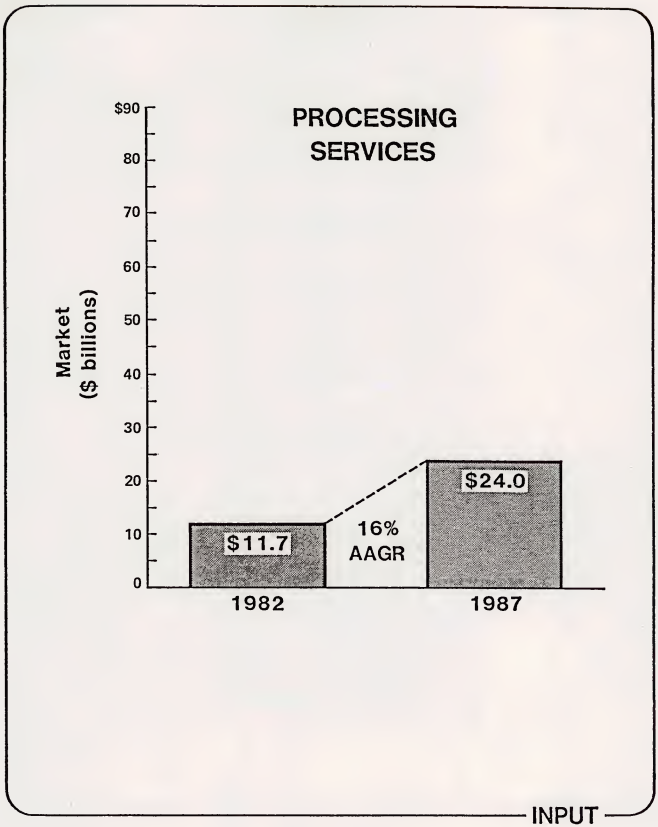
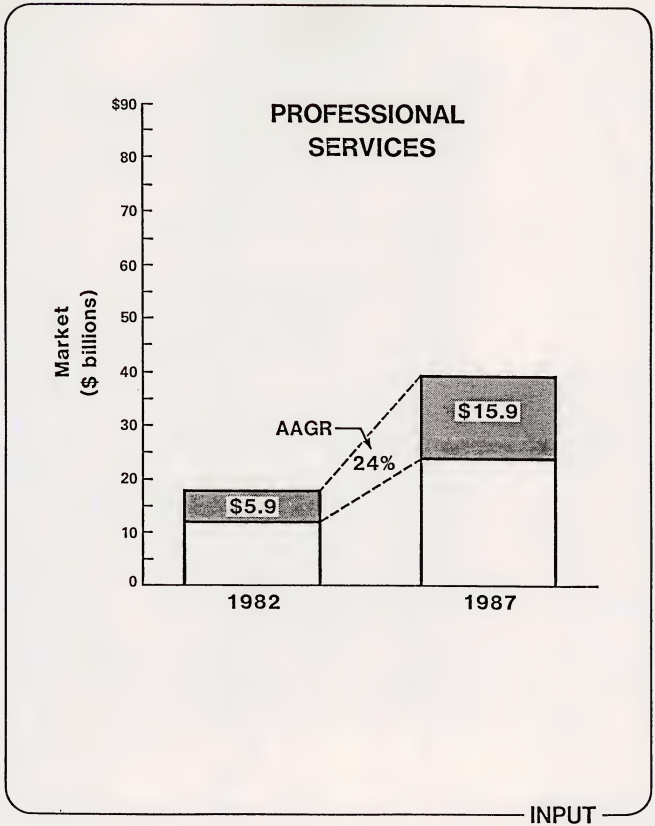
FORECAST PARAMETERS

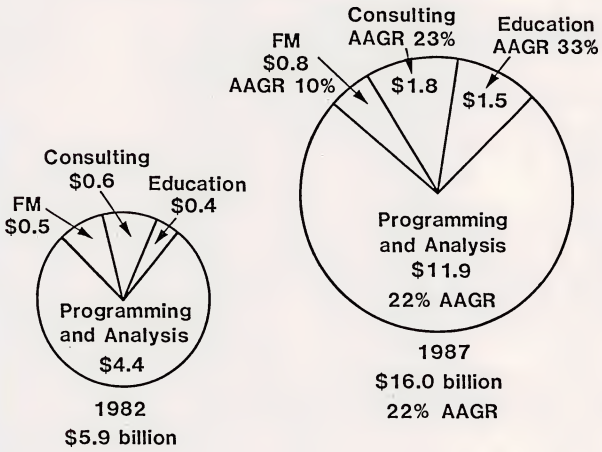
- Inflation 6% 1982-1987
- Corresponding Price Increases
  - 4% Processing Services
  - 5% Professional Services
  - 5.5% Software Products
  - 2% Integrated Systems
- Slow Recovery 1983-1984
- No Further Recession



028 MCP2



PROFESSIONAL SERVICES GROWTH



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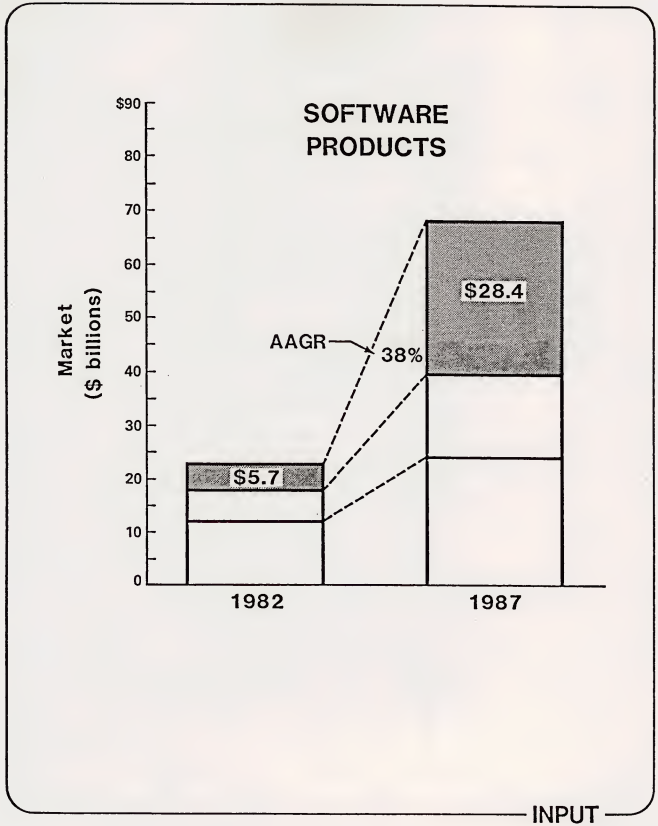
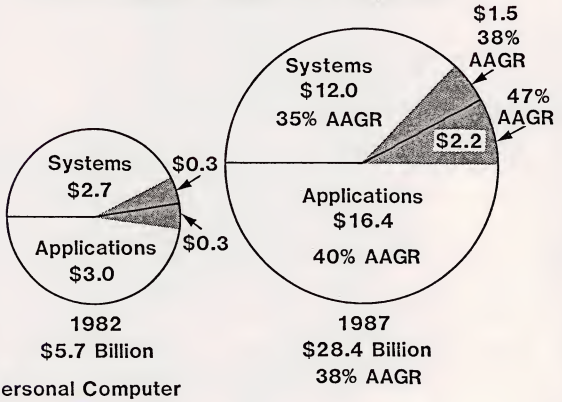


030 MCP2

SOFTWARE PRODUCTS GROWTH



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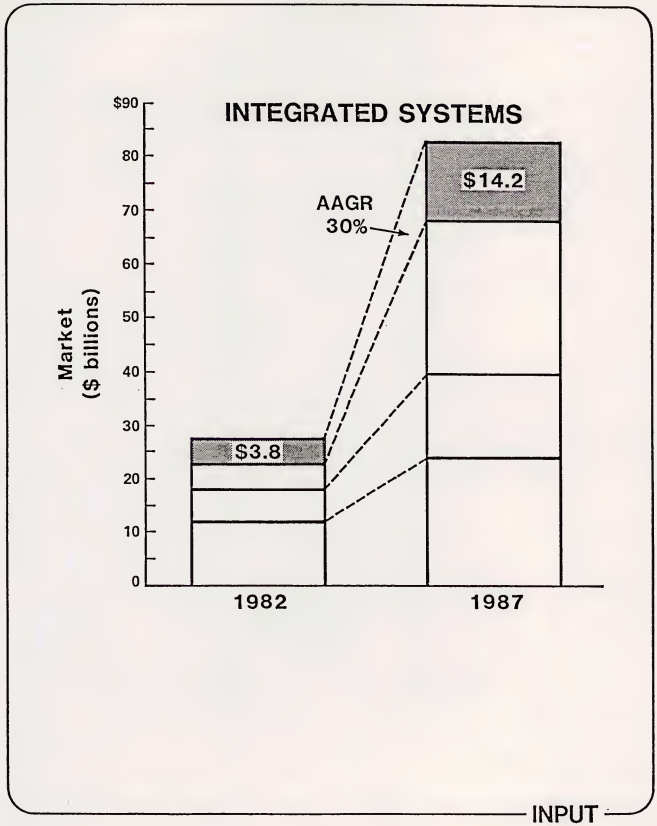
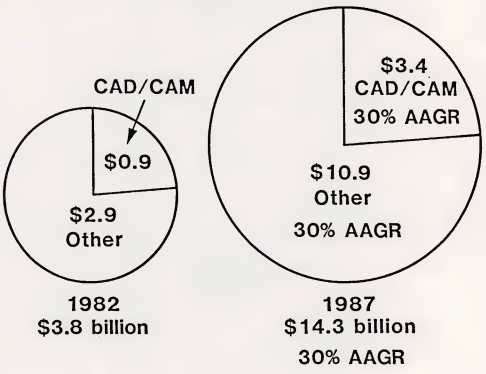


INTEGRATED SYSTEMS GROWTH



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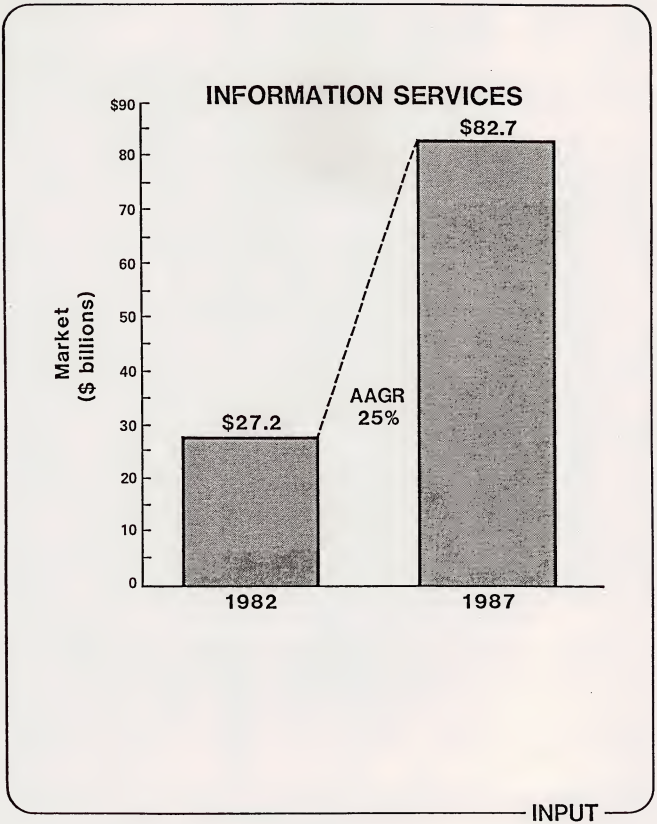
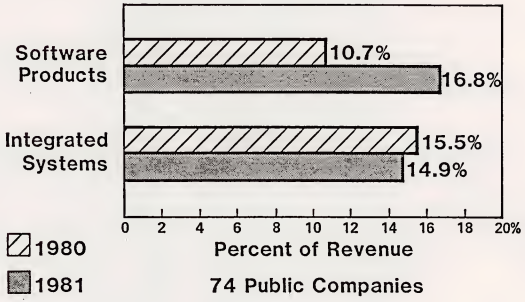


PROFIT MARGINS



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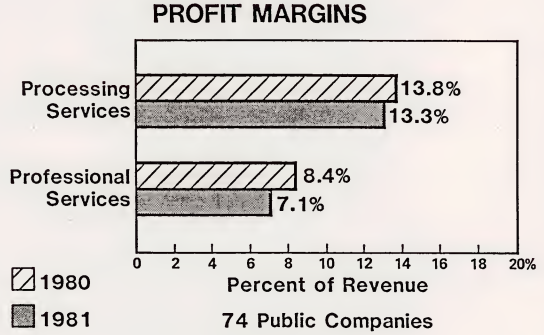

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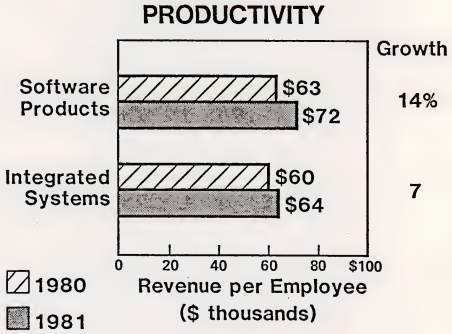

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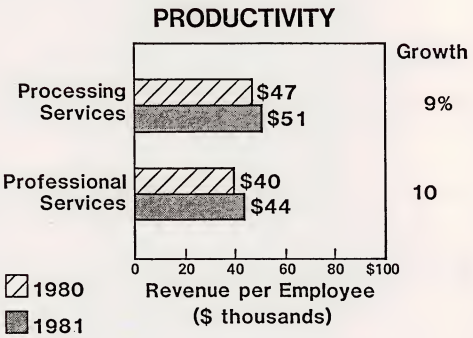

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1983 PROCESSING SERVICES

- Slower Growth
- Increasing Data Communication Costs
- Pressure From Smaller Systems
- Multiple Opportunities
  - Analytical-Based Systems
  - Industry Markets
  - New Delivery Modes

1983 SOFTWARE PRODUCTS

- Financial "Leader of the Pack"
- Danger From Product Obsolescence
- Growth Sources
- Opportunities
  - Integrated Product Lines
  - Personal Computers
  - Distribution

INPUT

1983 PROFESSIONAL SERVICES

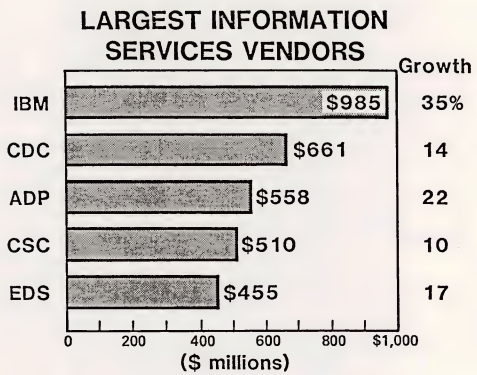
- Thin Profit Margins
- More Complex Environments
- Alternative Delivery Modes
- Opportunities
  - Increased Specialization
  - Re-sellable Products, Packaging

INPUT

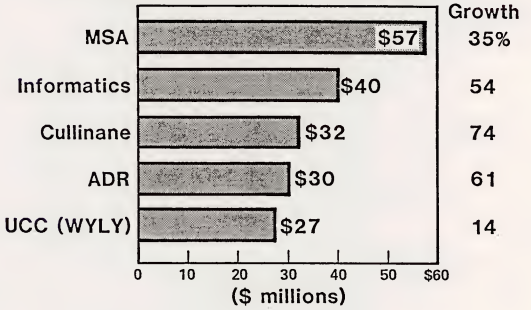
1983 INTEGRATED SYSTEMS

- Rapid Growth Led By CAD/CAM
- More Competition
- Customer Support Costs
- Extent of Hardware Manufacturing
- Opportunities
  - Industry-Specialized Products
  - Network Connections

INPUT


LARGEST INFORMATION SERVICES VENDORS
Growth
IBM
$985
35%
CDC
$661
14
ADP
$558
22
CSC
$510
10
EDS
$455
17
0
200
400
600
800
$1,000
($ millions)

LARGEST INDEPENDENT SOFTWARE PRODUCT VENDORS



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LARGEST SOFTWARE PRODUCTS VENDORS BY
NONCAPTIVE U.S. REVENUE

RANK		COMPANY	CALENDAR YEAR REVENUES ($ millions)		1980/1981 PERCENT GROWTH
1981	1980		1980	1981	
1	1	International Business Machines (IBM)	$595	$815	37%
2	2	Control Data Corporation (CDC)	80	85	6
3	3	Sperry Corporation	55	67	22
4	4	Digital Equipment Corporation (DEC)	47	64	36
5	7	Management Science America, Inc. (MSA)	42	57	35
6	5	Burroughs Corporation	47	52	11
7	6	Honeywell, Inc.	45	50	11
8	9	Informatics General Corp.	26	40	54
9	11	Tandy Corporation	21	36	71
10	8	Hewlett-Packard Company (H-P)	28	34	21
11	15	Cullinane Database Systems	18	32	74
12	14	Applied Data Research (ADR)	19	30	61
13	10	University Computing (WYLY)	24	27	14
14	37	Apple Computer	7	26	304
15	13	Data General Corporation (DG)	19	26	37
16	18	Cincom Systems, Inc.	16	25	57
17	12	NCR Corporation	20	24	21
18	19	Kirchman Corporation	15	21	40
19	22	McCormack and Dodge	14	21	47
20	16	Texas Instruments	18	20	11

FASTEST GROWING SOFTWARE PRODUCTS VENDORS WITH NONCAPTIVE U.S. REVENUE OVER $10 MILLION

1981 RANK	COMPANY	CALENDAR YEAR REVENUE ($ millions)		1980/1981 PERCENT GROWTH
		1980	1981	
1	Softsel	$ 0	$14	6,900%
2	Visicorp	4	16	400
3	Apple Computer	7	26	304
4	Westinghouse Corporation	3	12	302
5	Policy Management Systems (PMS)	4	13	208
6	Lifeboat Associates, Inc.	4	11	163
7	Technicon Data Systems Corp.	8	19	129
8	Software AG of North America, Inc.	10	20	96
9	Tandem Computers, Inc.	9	17	84
10	Integrated Software Systems	6	11	75

NOTE: Growth rates are rounded and are based on revenues rounded to nearest thousand; revenues shown are rounded to the nearest $1 million.

LARGEST APPLICATION SOFTWARE VENDORS BY
NONCAPTIVE U.S. REVENUE

RANK		COMPANY	CALENDAR YEAR REVENUES ($ millions)		1980/1981 PERCENT GROWTH
1981	1980		1980	1981	
1	1	International Business Machines (IBM)	$105	$150	43%
2	2	Management Science America, Inc. (MSA)	42	57	35
3	3	Sperry Corporation	19	26	37
4	6	Informatics General Corp.	14	24	68
5	9	Digital Equipment Corporation (DEC)	14	22	57
6	5	Kirchman Corporation	15	21	40
7	7	McCormack and Dodge	14	21	47
8	4	Technicon Data Systems Corp.	18	20	12
9	14	Anacomp, Inc.	8	19	129
10	10	Burroughs Corporation	14	16	14
11	27	Policy Management Systems	4	13	208
12	17	Tandy Corporation	7	13	86
13	8	Insurance Systems of America (ISA)	14	13	(8)
14	65	Softsel	0	12	6,900
15	11	Honeywell, Inc.	11	12	9
16	12	University Computing (WYLY)	10	12	14
17	13	CAPEX	9	12	32
18	18	McDonnell Douglas Automation (MCAUTO)	7	12	71
19	19	Comserv Corp.	7	12	71
20	20	Integrated Software Systems	6	11	75

FASTEST-GROWING APPLICATION SOFTWARE VENDORS WITH NONCAPTIVE U.S. REVENUE OVER $5 MILLION

1981 RANK	COMPANY	CALENDAR YEAR REVENUE ($ millions)		1980/1981 PERCENT GROWTH
		1980	1981	
1	Softsel	$ 0	$12	6,900%
2	Westinghouse Corporation	0	9	1,815
3	Dyatron Corp.	1	5	238
4	Policy Management Systems	4	13	208
5	Lifeboat Associates, Inc.	3	8	163
6	Anacomp, Inc.	8	19	129
7	Execucom Systems Corporation	5	9	90
8	NCA Corp.	5	9	88
9	Tandy Corporation	7	13	86
10	Thomas National Group	4	7	83

NOTE: Growth rates are rounded and are based on revenues rounded to nearest thousand; revenues shown are rounded to the nearest $1 million.

LARGEST SYSTEM SOFTWARE VENDORS
BY NONCAPTIVE U.S. REVENUE

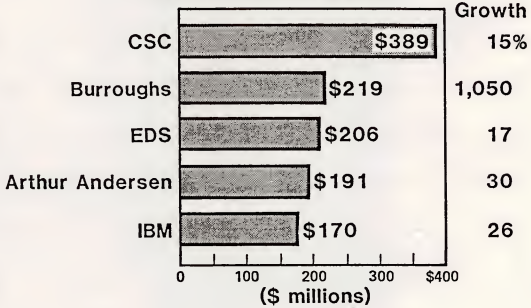
RANK		COMPANY	CALENDAR YEAR REVENUES ($ millions)		1980/1981 PERCENT GROWTH
1981	1980		1980	1981	
1	1	International Business Machines (IBM)	$490	$665	36
2	2	Control Data Corporation (CDC)	80	85	6
3	5	Digital Equipment Corporation (DEC)	33	42	27
4	3	Sperry Corporation	36	41	14
5	4	Honeywell, Inc.	34	38	12
6	6	Burroughs Corporation	33	36	9
7	8	Cullinane Database Systems	18	32	71
8	9	Applied Data Research (ADR)	18	28	63
9	26	Apple Computer	7	26	304
10	7	Hewlett-Packard Company (H-P)	20	24	20
11	12	Cincom Systems, Inc.	15	24	56
12	14	Tandy Corporation	14	23	64
13	18	Software AG of North America, Inc.	10	20	96
14	11	NCR Corporation	16	19	21
15	16	Data General Corporation (DG)	13	18	39
16	28	Visicorp	4	18	400
17	10	Texas Instruments	16	18	11
18	13	Pansophic Systems, Inc.	15	18	21
19	19	Tandem	9	17	84
20	17	Informatics General Corp.	11	15	36

FASTEST-GROWING SYSTEM SOFTWARE VENDORS WITH NONCAPTIVE U.S. REVENUE OVER $10 MILLION

1981 RANK	COMPANY	CALENDAR YEAR REVENUE ($ millions)		1980/1981 PERCENT GROWTH
		1980	1981	
1	Visicorp	$ 4	$18	$400
2	Apple Computer	7	26	304
3	Software AG of North America, Inc.	10	20	96
4	Microsoft	5	10	89
5	Tandem Computers, Inc.	9	17	84
6	Cullinane Data Base Systems	18	32	71
7	Tandy Corporation	14	23	64
8	Applied Data Research (ADR)	18	28	63
9	Computer Associates, Inc.	8	13	55
10	Data General Corporation (DG)	13	18	39

NOTE: Growth rates are rounded and are based on revenues rounded to nearest thousand; revenues shown are rounded to the nearest $1 million.

LARGEST PROFESSIONAL SERVICES VENDORS



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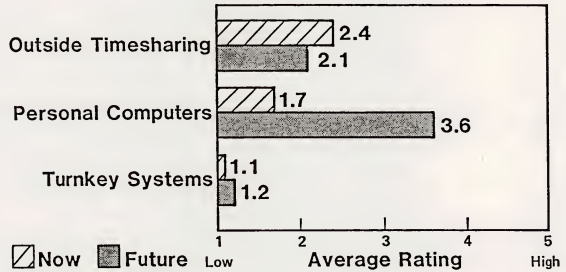
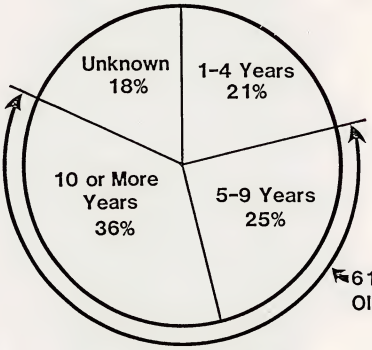
IMPORTANCE OF ALTERNATIVE SOURCES
(END USERS)



17 Respondents

INPUT

USER SOFTWARE IS GETTING OLD

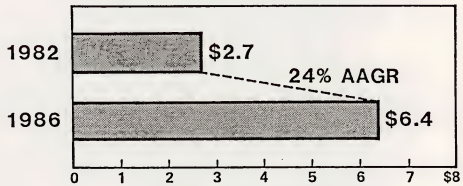


Age of Key Systems

28 Respondents

INPUT

BANKING INFORMATION SERVICES MARKET GROWTH



User Expenditures*
($ billions)

*Includes Processing Services, Software and Professional Services

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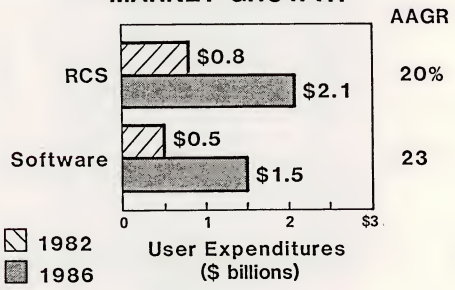
103A MCP2

BANKING INFORMATION SERVICES MARKET GROWTH



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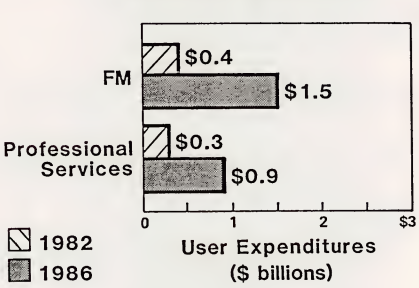
103B MCP2

BANKING INFORMATION SERVICES MARKET GROWTH



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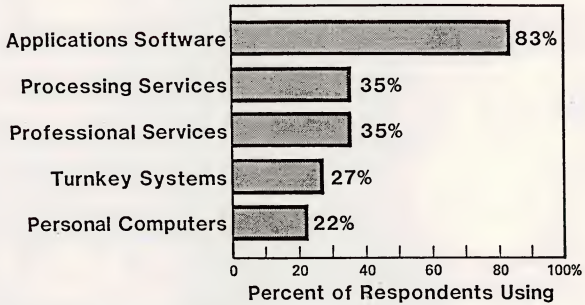
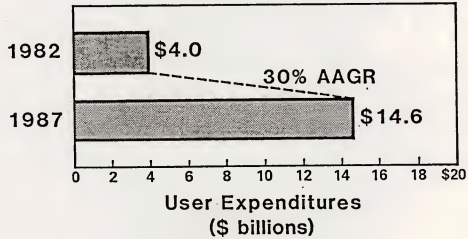
SERVICES USAGE



52 Respondents (Discrete Manufacturing)

DISCRETE MANUFACTURING INFORMATION SERVICES MARKET



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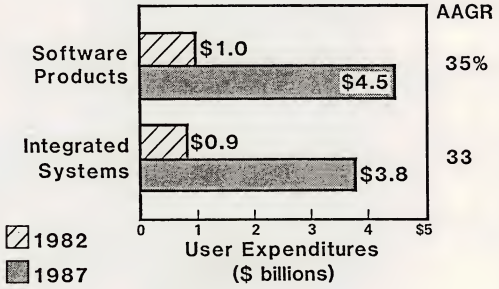
MARKET GROWTH BY MODE
(DISCRETE MANUFACTURING)



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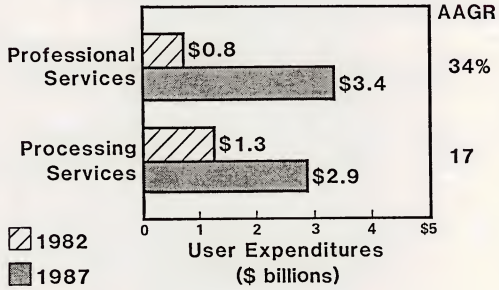
MARKET GROWTH BY MODE
(DISCRETE MANUFACTURING)



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SOFTWARE PRODUCT CHALLENGES

- Next Generation Software
- Better-Financed Competition
- Growth Sources
- Systems/Application Market Differences

SOFTWARE PRODUCT REVENUE

Category	1981 Revenue
Product Sales	74%
Maintenance	19
Customization	2
Training and Documentation	5
Total	100%

29 Respondents

SOFTWARE PRODUCT OPPORTUNITIES

- Multiple Funding Sources
- Integrated Product Lines
- Personal Computers
- Expanded Distribution Channels
- Acquisitions

PROFESSIONAL SERVICE CHALLENGES

- Profit Margin Decline
- Proliferation of Technology
- Delivery Mode Options

INPUT

PROFESSIONAL SERVICES REVENUE BY SOURCE

Revenue Source	1981 Revenue
Programming and Analysis	75%
Consulting Services	11
Facilities Management	9
Education and Training	6
Total	100%

PROFESSIONAL SERVICES OPPORTUNITIES

- Top Management Selling
- More Specialization
- System Ownership
  - Software Products
  - Integrated Systems

INPUT

CHALLENGES
INTEGRATED SYSTEMS

- Competition From...
  - Smaller Systems
  - Hardware Manufacturers
  - RCS Vendors
- High Labor Content of Customer Support

INPUT

INTEGRATED SYSTEMS REVENUE

Revenue Source	1981 Revenue
Hardware	72%
Software	13
Hardware Maintenance	11
Software Maintenance	4
Total	100%

16 Respondents

INTEGRATED SYSTEMS OPPORTUNITIES

- Provide More Interfaces
- New Customer Support Methods
- Increased Continuing Revenue
  - Maintenance
  - Support

INPUT

FOCUS ON OPPORTUNITY

- Software Products Success Requires . . .
  - Integrated Product Lines
  - Continuous, Correct Investment
  - Support Strength
  - Well "Packaged" Products

INPUT

FOCUS ON OPPORTUNITY

- Professional Services Opportunity
  - Specialization
  - Packaging
  - Leveraging Expertise
  - Promotion

INPUT

SOFTWARE INDUSTRY OVERVIEW:
CASE STUDIES

PRESENTED TO:
IBM SOFTWARE ENGINEERING INSTITUTE

DECEMBER 1, 1982

OVERVIEW

- Product-oriented companies.
  - Mousetrap builders.
    - "Build a better mousetrap and the world will beat a path to your door."
  - Era not over.
- Marketing companies.
  - Doesn't just mean effective selling.
- Mutually exclusive?

OUTLINE

- Product-oriented companies.
  - VisiCalc (Software Arts, VisiCorp).
  - Syncsort.
  - SofTech Microsystems.
  - BGS.
- Industry-oriented applications software.
  - Insurance software.
    - ISA.
    - PMS.
  - User needs.
- DBMS software.
  - Cincom.
  - Cullinane.
  - Software AG.

OUTLINE - (continued)

- Financial Software.
  - MSA.
  - McCormack and Dodge.
- Software maintenance.
- A software startup.

MOUSETRAPS

- Three kinds of mousetraps:
  - The "first" mousetrap (e.g., VisiCalc).
  - A "better" mousetrap (e.g., Syncsort).
  - "Another" mousetrap (e.g., IDMS).
  - All do a good job.
- Mousetrap perceptions are at least as important as reality.
- Mousetraps are a combination of:
  - Product.
  - Strategy.
  - Timing (i.e., luck).

FIRST MOUSETRAPS

- Quality and performance are irrelevant beyond a certain point. For example:
  - Personal computer world.
    - VisiCalc.
    - CP/M.
    - Microsoft BASIC.
  - Much IBM software.
- "Fustes with the Mostes."
- A rising tide floats all ships.

VISICALC

- Dan Bricklin (Software Arts) had insight and developed product.
- Dan Fylstra (VisiCorp, formerly Personal Software) obtained marketing rights.
- Price strategy: inspired.
- Are these one-shot companies?
  - VisiCorp: Visi-family.
  - Software Arts: TK-solver.
    - A equation framework modeled conceptually on VisiCalc.

OTHER FIRST MOUSETRAPS

- Digital Research: CPM.
  - Conscious decision to adapt it to every microprocessor implementation.
- Microsoft: Microsoft Basic.
  - A million copies sold.
  - Similar blanket-the-market approach.

BETTER MOUSETRAPS

- Often one product companies.
- Syncsort Inc.
  - Advertising for new documentation package has to contain a sentence, "This is not a sort package."
  - Name changed from Whitlow Systems several years ago.
- SofTech Microsystems.
  - SofTech subsidiary.
  - Personal computer operating environment: UCSD p-System.
  - Licensed from UC San Diego.
    - Fully portable applications.
  - But a late entrant (CPM, MS-DOS).
    - Aggressive marketing.

BGS SYSTEMS: A BETTER MOUSETRAP

- Academic founders: 1975; (Buzen, Goldberg, Schwenk: Math PhD's).
  - Initially, computer performance consulting.
- Foundation product: BEST/1 in 1978.
  - Computer system capacity projection tool.
  - Application of queueing theory modeling approach.
    - In contrast to simulation approaches (e.g., SNAP SHOT).
- Added companion products.
- Rapid acceptance.
- Excellent marketing and support.
  - Good materials.
  - Mix users and prospects.
  - Limitation: Technical staff are best salesmen.

A TALE OF TWO INSURANCE APPLICATIONS VENDORS

- Insurance Systems of America (ISA).
  - Formed in 1969 by 15 insurance companies.
- Policy Management Systems (PMS).
  - EDP organization within an insurer: Seibels, Bruce and Company.
  - Began offering services commercially in 1974.

PRODUCT ANALYSIS

- o Not mousetrap-type products.
  - Expensive.
  - Unwieldy.
  - Marginal improvements to many in-house systems.
- o Often used as a framework in large customers.
- o Usually too large for smaller companies.
- o Market often assumed to be thousands of companies.

FINANCIALS

	REVENUES ($ MILLIONS)	
	1979	1980
ISA	$17.0	$22.0
PMS	$12.5	$16.7

- ISA sold to United Telecom in 1981 for $40 million.
- PMS spin off in public offering in 1982.

ISA PRODUCT MIX - 1981

		SHARE OF WEIGHTED PRODUCT BASE	
o	Financial products		51%
	- Accounting and budgeting	29%	
	- Cash disbursements	7%	
	- Modeling	2%	
	- Stock and bond (batch)	9%	
	- Stock and bond (on-line)	4%	
o	General software		6%
	- Report writer	1%	
	- File maintainer	5%	
o	Insurance software		43%
	- Health	15%	
	- Property/casualty	28%	

ISA - 1982 PRODUCTS

- Dental claims software.
- Group insurance administration software.
- Apple-based life agent quotation product.

1982: A YEAR OF DISASTER FOR ISA

- Current property/casualty (personal lines) business sold at loss.
- Commercial lines property/casualty system under development sold.
- Withdrew from marketing health insurance software.
- Dropped dental and group softwre.
- New strategy: Focus on all industries.
  - But:
    - Products obsolescent.
    - Salesforce = ?

PMS SUCCESS: WHY?

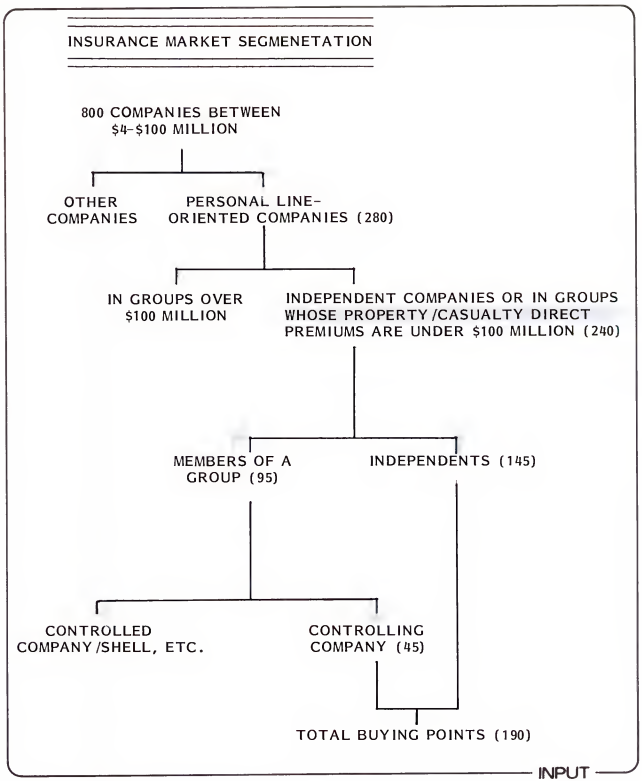
- Product adequate, at best.
- Customers barely satisfied.
- A single product focus.
  - Processing/software synergy.
- Aggressive selling.
- High prices, obligatory maintenance.
- Strong management.
- Investment from parent.

ISA FAILURE: WHY?

- Products not always adequate.
- Customers barely satisfied.
- Salesforce turnover.
- Lower prices.
- Variable management.
- No new investment after 1969.
- ISACOMM subsidiary distraction.
- No product focus.
  - Market sizing.

PROPERTY/CASUALTY COMPANIES

COMPANY TYPE	NUMBER OF COMPANIES	
Stock companies	-	1,000
Under 2 million (direct premiums)	800	-
Over $2 million (direct premiums)	800	-
Mutual companies	-	1,600
"Leading" mutuals (per best)	300	-
Other mutuals	1,300	-
Other (Lloyds, Reciprocals, Factory mutuals)		75
TOTAL	-	2,575


INSURANCE MARKET SEGMENETATION
800 COMPANIES BETWEEN $4-$100 MILLION
OTHER COMPANIES
PERSONAL LINE-ORIENTED COMPANIES (280)
IN GROUPS OVER $100 MILLION
INDEPENDENT COMPANIES OR IN GROUPS WHOSE PROPERTY/CASUALTY DIRECT PREMIUMS ARE UNDER $100 MILLION (240)
MEMBERS OF A GROUP (95)
INDEPENDENTS (145)
CONTROLLED COMPANY/SHELL, ETC.
CONTROLLING COMPANY (45)
TOTAL BUYING POINTS (190)
INPUT

IMPORTANCE OF VENDOR SELECTION FACTORS TO COMPANIES

RANKING OF FACTOR	FACTORS	COMMENTS
High	System reliability	Factors are important after acquisition
	Time and effort to implement	Involve implementation and operation
	Flexibility	
	User control	
	Support and training	
Medium-High	Reputation/references	Factors are important before acquisition
	Cost	
	System features	
Medium	Response time	Response time important to those going on-line
	Vendor size	
Medium-Low	Numbers of current customers	
	Geographic location of vendor	

DBMS SOFTWARE

- Major DBMS vendors profiles very similar:
  - Cincom (Total).
  - Cullinane (IDMS)
  - Software AG (ADABAS).
- Each DBMS product was introduced around 1970.
  - Good products, but did not represent breakthroughs.
  - Each was "another mousetrap."
  - Small start-ups.

DBMS SOFTWARE - (continued)

- Success due to:
  - Market need.
  - Intensive marketing.
  - Lack of an unquestionned leading product.
  - Personal force of top executive.
- Each company aware of "topping out syndrome."
  - Expand into a family of products.
  - Add applications (Cullinane, Cincom).
  - Add processing (Cullinane).
- Foundation to other packages.

CINCOM SOFTWARE PRODUCTS

PRODUCT NAME	DESCRIPTION	TYPICAL PRICE
Systems Software		
TOTAL	Data base management system (DBMS)	$ 70,000 (Mainframes) $ 20,000 (Minicomputers)
ENVIRON/I	Teleprocessing monitor	$ 50,000
MANTIS	Interactive applications development	$ 35,000
DCS (Data Control System)	Data dictionary/applications development	$ 45,000
T-ASK	Interactive DBMS query facility	$ 37,000
SOCRATES	Report generator	$ 27,500
LMS-II	On-line editor and library system	$ 23,500
ENV-DATA	On-line data entry system	$ 16,800
TIS (Total Information System)	Directory-driven DBMS, query, report writer, TP monitor, and utilities system	$250,000
Applications Software		
MRPS (Manufacturing Resource Planning System)	Manufacturing control system	$150,000
EPOCH-FMS	Financial applications development system	$100,000

CULLINANE SOFTWARE PRODUCT OFFERINGS

PRODUCT	FUNCTION	NUMBER INSTALLED
DATA BASE SOFTWARE		
• IDMS	DATA BASE MANAGEMENT SYSTEM	800+
• IDD	INTEGRATED DATA DICTIONARY	600+
• IDMS-DC	TELEPROCESSING MONITOR	145
- UNIVERSAL COMMUNICATIONS FACILITY (UCF)	IDMS TELEPROCESSING MONITOR INTERFACE	12
• APPLICATIONS DEVELOPMENT SYSTEMS (ADS)		
- ADS-BATCH	BATCH APPLICATIONS DEVELOPMENT TOOL	10
- ADS-ONLINE	ON-LINE APPLICATIONS DEVELOPMENT TOOL	NEW
- INTERACT	ON-LINE INTERACTIVE EDITING, TEXT PROCESSING AND RJE SYSTEM	90
• IDMS/CULPRIT	DATA RETRIEVAL AND REPORT GENERATOR	650
• ONLINE QUERY	INTERACTIVE INFORMATION RETRIEVAL SYSTEM	375+
• ONLINE ENGLISH (OLE)	ENGLISH-LANGUAGE QUERY FACILITY	10
• DISTRIBUTED DATA BASE SYSTEM	DISTRIBUTED DATA BASE SYSTEM	10
• ESCAPE PRODUCTS	NON-IDMS APPLICATION INTERFACE	5
• IDMS-DMS INTERFACE	IDMS-CICS DMS/VS INTERFACE	10
AUDIT SOFTWARE		
• INFORMATION DIRECTORY	CENTRAL DICTIONARY/DIRECTORY FOR AIMS	5
• EDP-AUDITOR	AUDIT SOFTWARE PACKAGE	500
- EDP-AUDITOR 13	AUDIT PACKAGE FOR IBM SYSTEM 13	50
• CARS	AUDIT INFORMATION RETRIEVAL SYSTEM	650+
APPLICATION SOFTWARE		
• CUSTOMER INFORMATION SYSTEM (CIS)	ON-LINE CUSTOMER INFORMATION SYSTEM FOR BANKS	3(NEW)
• CULLINANE INTEGRATED MANUFACTURING SYSTEM (CIMS)	ON-LINE COMPREHENSIVE MANUFACTURING SYSTEM	NEW

SOFTWARE AG SYSTEMS GROUP, INC.

PRODUCT	DESCRIPTION	PRICE	CPU REQUIREMENTS* (OPERATING SYSTEM)
ADABAS	Data Base Management System	$ 99,000-$160,000	All IBM Operating Systems
ADABAS/VM	ADABAS VM Option	$ 24,000	DOS, DOS/VSE, OS/VSI, OS/MVS, CMS
ADABOMP	Bill of Materials Processor	$ 48,000	All DOS and OS
COM-PLETE	Teleprocessing System	$ 36,000-$ 90,000	OS/MVT, OS/VSI, OS/SVS, OS/MVS
NATURAL	Interactive Programming Language	$ 36,000-$ 48,000	All IBM Operating Systems
ADABAS-M	ADABAS for Minicomputers	$ 40,000	DEC PDP-11 Models 34-70, VAX-11/750, VAX-11/780 or Compatible;IAS,RSX-11,VMS
The Data Base Machine	Backend DBMS Processor	$297,000-$397,000	OS/VSI, OS/MVS
Channel-to-Channel Communications System	Communications Software	$ 65,000	OS/VSI, OS/MVS

MSA

- Near bankruptcy in early 1970's.
- Now largest independent: 5% of applications market.

MANAGEMENT SCIENCE AMERICA, INC.

Annual Report
for the year ended December 31, 1981

Selected Financial Data

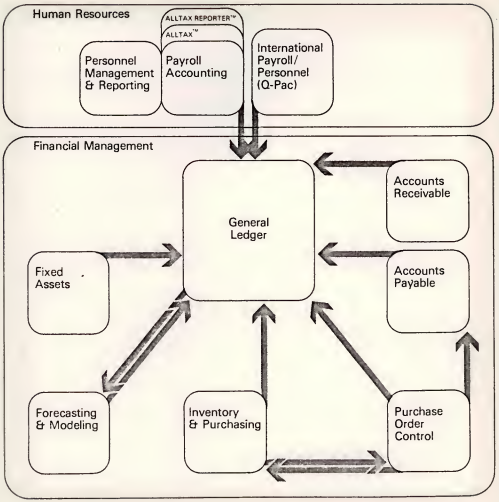
HIGHLIGHTS OF THE YEAR	1981	1980*	1979*	1978	1977
	(In thousands, except per share amounts)				
Revenues	$73,139	$53,724	$39,397	$26,160	$17,443
Income before provision for income taxes	10,112	5,360	5,466	2,427	1,579
Net income	5,487	2,912	2,591	1,134	786
Earnings per common share	$ .83	$ .53	$ .46	$ .20	$ .13

AT END OF YEAR	1981	1980*	1979*	1978	1977
	(In thousands, except employees)				
Working capital	$24,755	$ 5,890	$ 5,421	$ 3,822	$ 2,541
Total assets	51,876	28,637	16,795	11,395	8,598
Notes payable	2,265	6,143	446		
Shareholders' equity	34,634	10,782	7,911	6,191	5,062
Employees	1,002	832	653	458	328

MSA GROWTH STRATEGY - 1970'S

- Shed everything but financial software.
- Stress integration.
- Marketing.

MSA MAINFRAME PRODUCT INTEGRATION



MSA COMPETITION

- Software International (recent GE acquisition)
- McCormack and Dodge: most dynamic.

MSA VERSUS MCCORMACK AND DODGE

	MSA	McCormack And Dodge
1978 Revenues (million)	$26.2	$ 3.1
1981 Revenue (million)	$73.1	$26.0
Percent Increase	179%	739%
Fortune 500 penetration (1981)	56%	42%

- o McCormack and Dodge.
  - Newer products.
  - High commissions.

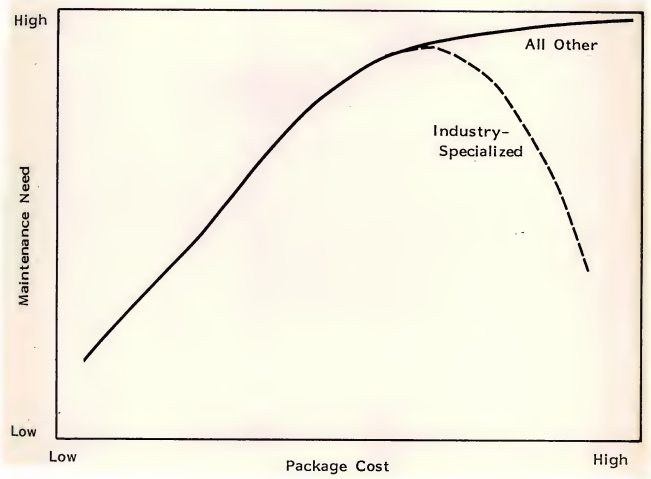
MSA GROWTH STRATEGY - 1980'S

- Financial software still core.
  - Flesh out existing product line.
  - Step down to 4321/31-sized organization.
  - Peachtree software acquisition (1981).
- Manufacturing Planning and Control.
  - Arista subsidiary of Xerox acquired (1982).
  - Eventually, integration with financial systems.
- International expansion.
  - Internation share of new business.
    - 1977: 3%
    - 1981: 21%
  - Q-Pac acquisition (1980).

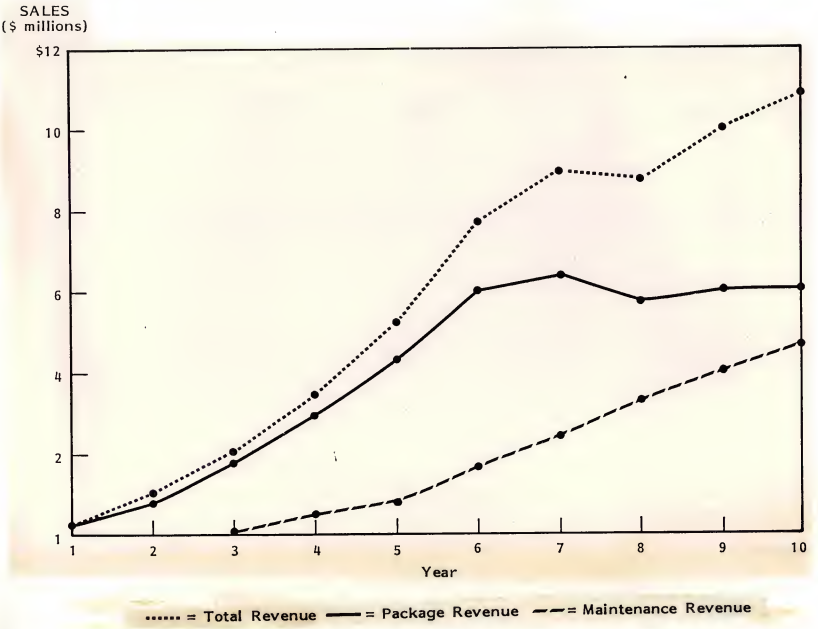
IMPORTANCE OF SOFTWARE MAINTENANCE

- Software maintenance over 20% of MSA's revenues.
  - Still increasing revenue share.
- Highly leveraged.
- Importance depends on price, application area.

SOFTWARE MAINTENANCE NEEDS



REVENUE COMPOSITION FOR A HYPOTHETICAL SOFTWARE PRODUCT



HYPOTHETICAL SOFTWARE PRODUCT: TEN-YEAR HISTORY

ASSUMPTIONS

- Peak sales in year six.
- Introductory price intentionally low; raised to market price in year three; 10% annual increase until year nine.
- No charge for maintenance first year after sale; thereafter, assumed that all customers are under maintenance.
- Annual maintenance cost is 12% of the sales price in the same years.

TEN-YEAR SOFTWARE PACKAGE AND MAINTENANCE REVENUE FOR A HYPOTHETICAL PRODUCT

YEAR	UNITS SOLD	PRICE/ UNIT ($ thousands)	PACKAGE REVENUE ($ thousands)	UNITS UNDER MAINTENANCE	MAINTENANCE PER UNIT ($ thousands)	MAINTENANCE REVENUE ($ thousands)	TOTAL REVENUE ($ thousands)	MAINTENANCE PERCENT OF TOTAL
1	20	$10	$ 200	0	0	0	$ 200	0
2	60	15	900	20	$1.8	$ 36	936	4%
3	100	18	1,800	80	2.2	176	1,976	9
4	150	20	3,000	180	2.4	432	3,432	13
5	200	22	4,400	330	2.6	858	5,258	16
6	250	24	6,000	530	2.9	1,537	7,537	20
7	250	26	6,500	780	3.1	2,418	8,918	27
8	200	28	5,600	930	3.4	3,162	8,762	36
9	200	30	6,000	1,130	3.6	4,068	10,068	40
10	200	30	6,000	1,330	3.6	4,788	10,788	44

A SOFTWARE START-UP -- BACKGROUND

- The product: Modeling software for a well-known small system.
  - May be a better mousetrap.
  - Order of magnitude better than VisiCalc?
- Developer profile:
  - "Demon programmer."
  - High energy levels.
  - No self doubt.
  - Full time job until recently.

SOFTWARE START-UP — TAKE OFF

- Implemented on one vendor's hardware.
  - Vendor cooperating.
- License agreement with foreign manufacturer.
- Considering other implementations.
- Received financing from private investor.
  - Brought together by common acquaintence.
  - Additional financing from limited partnership.

TAKE OFF OR CRASH?

Pluses

- Definite window of opportunity.
- At the least, a superior mousetrap.
- Can be priced at VisiCalc multiples.
- Hardware vendor cooperation.

Minuses

- If principal hit by car.
- A flood of independently conceived look-a-likes.
- Principal unable/unwilling to expand fast enough?

CONCLUSIONS

- Dynamic environment.
  - Hard to forecast winners.
- 1970's: Product, sales.
- 1980's: Distribution channels, support productivity.